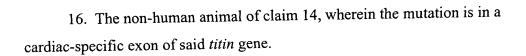
15

Claims

A method of determining whether a test subject has, or is at risk of developing, a titin-related disease or condition, said method comprising analyzing a nucleic acid molecule of a sample from the test subject to determine whether the test subject has a mutation in a *titin* gene, wherein the presence of said mutation is an indication that said test subject has, or is at risk of developing, a titin-related disease.

- 2. The method of claim 1, further comprising the step of using nucleic acid molecule primers specific for the *titin* gene for nucleic acid molecule amplification of the *titin* gene by the polymerase chain reaction.
 - 3. The method of claim 1, further comprising the step of sequencing *titin* nucleic acid molecules from said test subject.
 - 4. The method of claim 1, wherein said test subject is a mammal.
 - 5. The method of claim 1, wherein said test subject is human.
- 6. The method of claim 1, wherein said disease or condition is heart failure.
 - 7. The method of claim 1 wherein said mutation is the *pickwick* mutation.

- &: A method for identifying a compound that can be used to treat or to prevent heart failure, said method comprising contacting an organism comprising a titin mutation and having a phenotype characteristic of heart failure with said compound, and determining the effect of said compound on said phenotype, wherein detection of an improvement in said phenotype indicates the identification of a compound that can be used to treat or to prevent heart failure.
 - 9. The method of claim 8, wherein said organism is a zebrafish.
- 10. The method of claim 8, wherein said *titin* mutation is the *pickwick* mutation.
 - 11. A method of treating or preventing heart failure in a patient, said method comprising administering to said patient a compound identified using the method of claim 8.
 - 12. The method of claim 11, wherein said patient has a mutation in the *titin* gene.
- 20 13. The method of claim 12, wherein said mutation is the *pickwick* mutation.
 - 14. A non-human animal comprising a mutation in a titin gene.
- 25 15. The non-human animal of claim 14, wherein the non-human animal is a zebrafish.



- 17. The non-human animal of claim 16, wherein the mutation is in the N2B exon of said *titin* gene.
 - 18. The non-human animal of claim 14, wherein the mutation results in the presence of a stop codon in said *titin* gene.
- 19. The non-human animal of claim 14, wherein the mutation is the *pickwick* mutation.